define the first and second surfaces **215** and **315**, respectively, and are preferably of the type as described in U.S. application Ser. No. 12/319,334 filed on 5 Jan. 2009 and entitled "User Interface System." The first and second substrate portions **220** and **320** preferably support the first and second layers **210** and **310**, respectively, and at least partially define the first and second fluid vessels **227** and **327**, respectively, that are substantially similar and of the type as described in U.S. application Ser. No. 12/319,334 filed on 5 Jan. 2009 and entitled "User Interface System." The first and second fluid vessels **227** and **327** may include a first and second cavity **225** and **325**, respectively, and/or a first and second channel **238** and **338**, respectively, but may alternatively include any other suitable combination of cavities and channels. Alternatively, the first and second sheets **202** and **302** may alternatively be substantially different. For example, the first sheet **202** may include a first layer portion **210** and a first substrate portion **220** of the type described in U.S. application Ser. No. 12/319,334 filed on 5 Jan. 2009 and entitled "User Interface System," while the second sheet **302** may be a substantially continuous sheet that defines the second surface **315** and the second fluid vessel **327**. However, any other suitable arrangement of the first and second sheets **202** and **302** may be used.

[0012] The displacement device **130** functions to manipulate at least one of the first and second volumes of fluid **202** and **302**, thereby deforming at least one of the first and second particular regions **213** and **313** and is preferably of a type as described in U.S. application Ser. No. 12/319,334 filed on 5 Jan. 2009 and entitled "User Interface System," but may alternatively be any other suitable type of displacement device. The displacement device **130** is preferably coupled to at least one of the first fluid vessel **227** and **327** and functions to manipulate the volume of fluid within the coupled fluid vessel to expand at least a portion of the fluid vessel to deform a corresponding particular region. The displacement device **130** preferably subsequently manipulates the volume of fluid within the coupled fluid vessel to un-deform the corresponding particular region.

[0013] In a first variation of user interface system **100**, as shown in FIG. **2**, the first deformable layer is separate from the second deformable layer, where the displacement device includes a first displacement device **130***a* that is coupled to the first fluid vessel **227** of the first deformable layer **200** and functions to manipulate the first volume of fluid **212** to deform a first particular region **213** of the first surface **215** and a second displacement device **130***b* that is coupled to the second fluid vessel **327** of the second deformable layer **300** and functions to manipulate the second volume of fluid **312** to deform a second particular region **313** of the second surface **315**. A processing unit preferably controls both the displacement devices **130***a* and **130***b* of the first variation to manipulate the first and second volumes of fluid **212** and **312** independently of each other.

[0014] In a second variation of the user interface system **100**, as shown in FIGS. **3***a* and **3***b*, the first and second deformable layers **200** and **300** are connected and the first and second deformable layers **200** and **300** share a displacement device **130**. In particular, the first and second fluid vessels **227** and **327** are both coupled to the displacement device **130**. In the example as shown in FIGS. **3***a* and **3***b*, the first and second layer portions **210** and **310** and the first and second substrate portions **220** and **320** are substantially continuous. In this second variation, the surface **115** may be planar (shown in FIG. **3***a*), but may alternatively be non-planar (shown in FIG. **3***b*). This may be useful in usage scenarios where the device has more than one face where tactile guidance is desired. To provide tactile guidance on more than one face of a device **10**, as shown in FIG. **1**, in the first variation of the user interface system **100**, the first surface **215** may be arranged on a first face of the device and the second surface **315** may be arranged on a second face of the device. In the second variation of the user interface system **100**, as shown in FIG. **3***b*, the connected first and second deformable layers **200** and **300** may be wrapped around the device to reach more than one face. The second variation may allow fewer parts and more cost effective manufacturing. A processing unit preferably controls the displacement device **130** to manipulate the first and second volumes of fluid **212** and **312** independently of each other. The user interface system **100** of this second variation may include a valve **132** or any other suitable fluid directing component may also be used to direct fluid displaced by the displacement device **130** to the desired fluid vessel or vessels.

[0015] In a third variation of the user interface system **100**, as shown in FIG. **4**, the first and second deformable layers **200** and **300** are physically separated, but still share a displacement device **130**. This allows for one displacement device to actuate the expansion and retraction of both the first and second fluid vessels **227** and **327** of the first and second deformable layers, respectively while allowing additional flexibility in characteristics and arrangement of the first and second deformable layers. A processing unit preferably controls the displacement device **130** to manipulate the first and second volumes of fluid **212** and **312** independently of each other. The user interface system **100** of this second variation may include a valve **132** or any other suitable fluid directing component may also be used to direct fluid displaced by the displacement device **130** to the desired fluid vessel or vessels. In this third variation, the first and second deformable layers **200** and **300** may be combined to function similarly to the second variation where the first and second deformable layers **200** and **300** are connected. However, any other suitable arrangement of the first and second deformable layers **200** and **300** may be used.

[0016] While the user interface system **100** of the preferred embodiments is preferably one of the above mentioned variations, the user interface system **100** may be of any suitable combination of the above variations and/or any other suitable variation.

[0017] In the first and third variations, the first deformable layer **200** and the second deformable layer **300** are preferably identical. For example, the first layer **210**, first substrate **220**, first fluid vessel **227**, and the displacement device **130***a* of the first deformable layer are each substantially similar or identical to the corresponding second layer **310**, second substrate **320**, second fluid vessel **327**, and the displacement device **130***b* of the second deformable layer. The corresponding components in the first and second deformable layers may be substantially similar or include slightly different properties that allow each portion to better provide the desired performance of each portion. For example, the first layer **210** of the first deformable layer functions to provide substantially rectangular deformed first particular region **213** of the first surface **215** and/or buttons that provide a "clicking" sensation to the user when the user inwardly deforms the deformed first particular region **213**, while the second deformable layer functions to provide a relatively smaller, substantially round deformed second particular region **313** of the second surface **315** that may be used to indicate the location of a volume